OMPS Nadir Ozone Products

Status and Outlook

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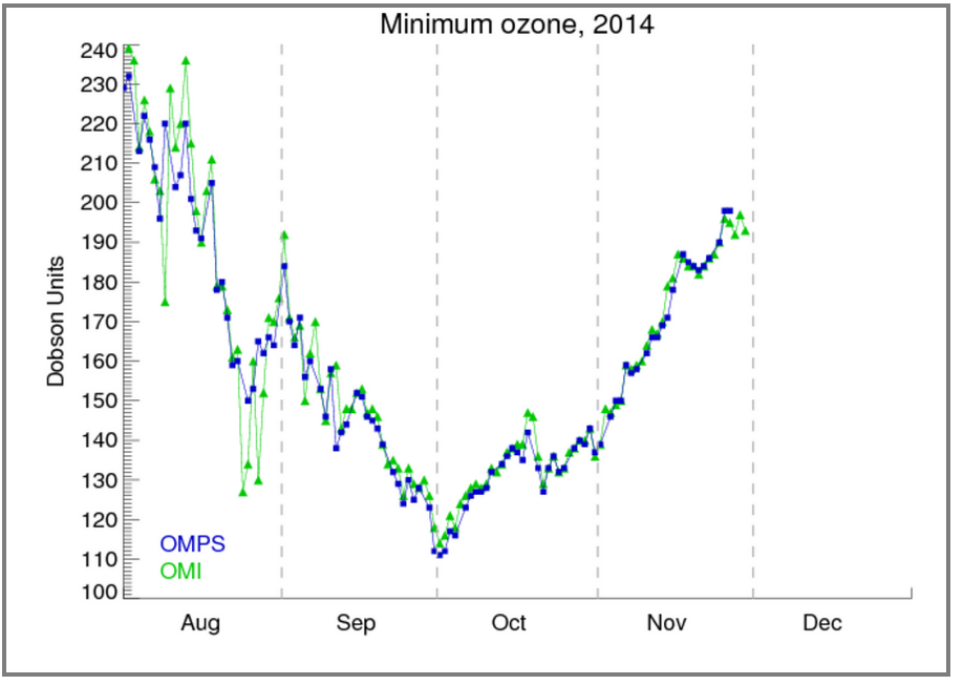
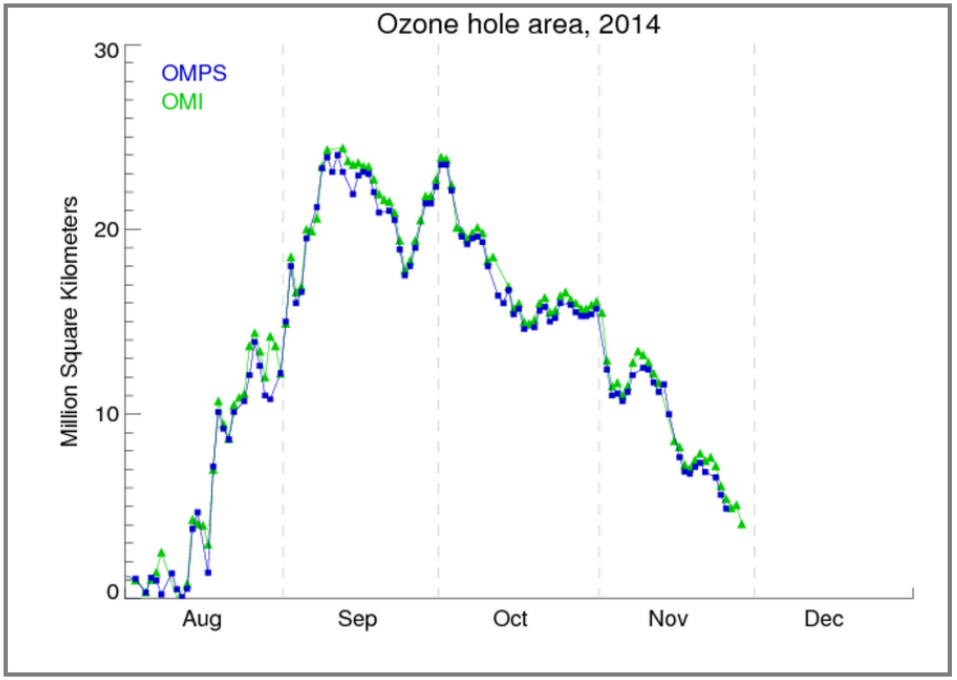
Near-term Plans for OMPS NM L2

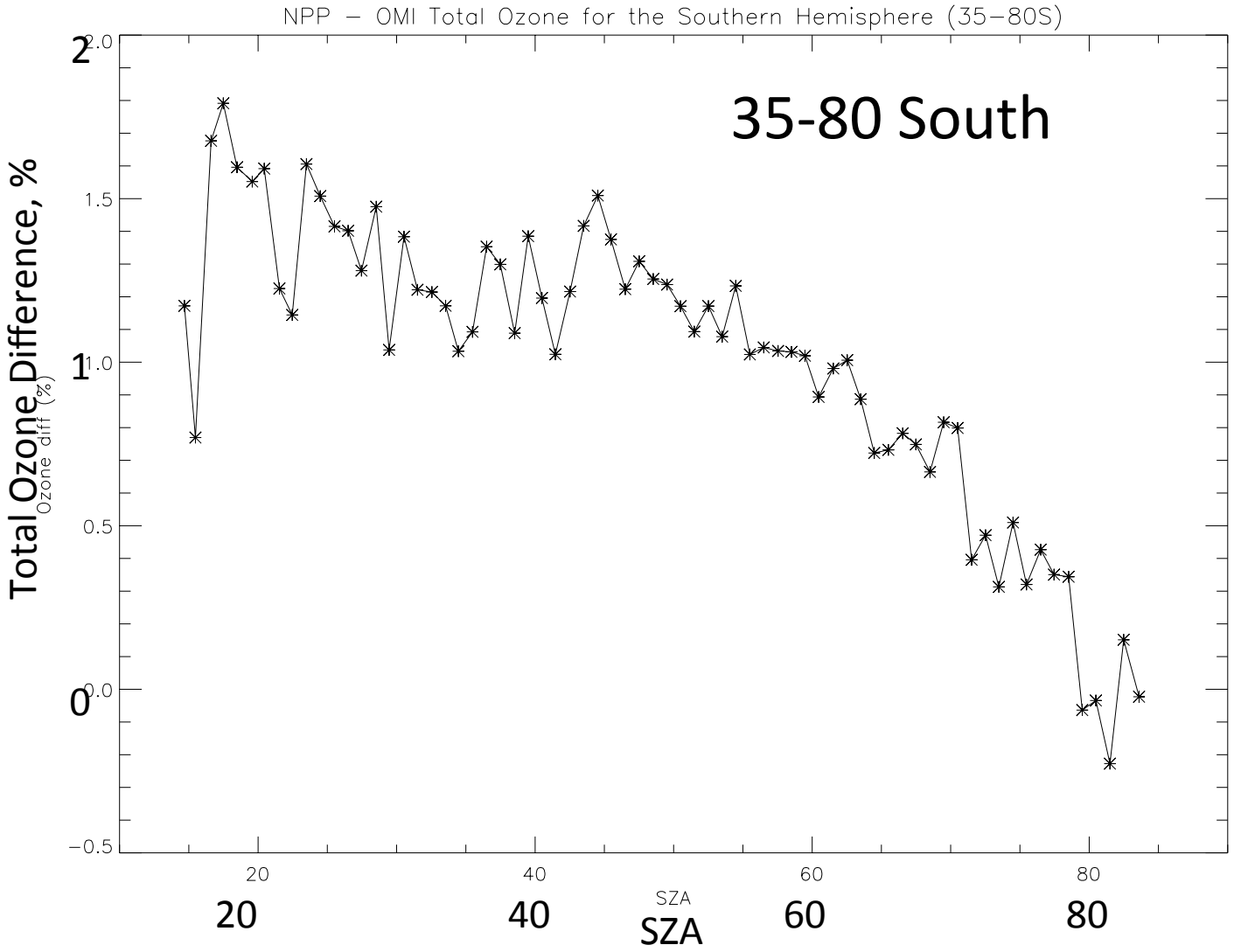
- Version 2 of dataset to use Version 8.6 TC algorithm
  - Revert to L1b/L2 nomenclature
- First reprocessing to take place December 2014 / January 2015
  - Choose wavelengths that minimize Raman scattering (generate new look-up tables)
  - Utilize output of concurrent processing of OCP algorithm
  - Analyze results
    - Look at effect of using concurrent OCP retrieval
    - Create a "soft calibration"
      - Absolute corrections determined from ice radiance method
      - Relative corrections determined from MLS/OMPS co-located data
        - NRs calculated using co-located MLS data, compared to measured OMPS NRs to determined N value adjustments
        - Validate with Taylor's analysis
      - Need soft calibration data for high-resolution data
  - Extend L3 product to to high-resolution data
- "Final" reprocessing to take place February/March 2015
  - Validate results
    - Compare to OMI, ground-based data, MLS, etc
- Release V2 dataset April 2015
- Continue "operational" processing and release
- Update real-time processing package and deliver to DRL for distribution

Comparison of OMPS to OMI During the 2014 Ozone Hole

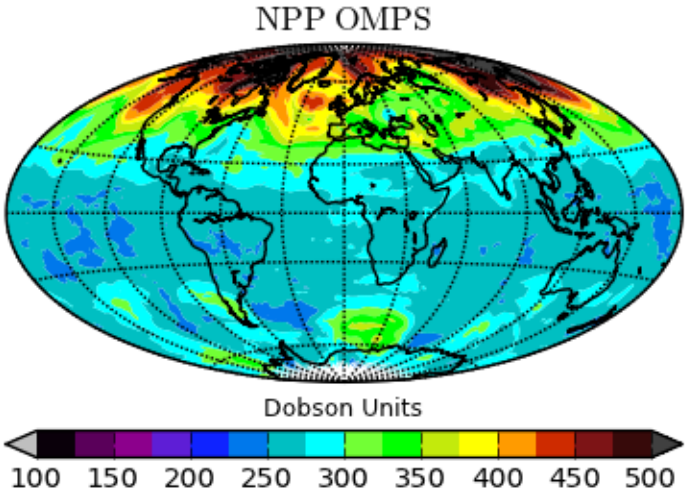


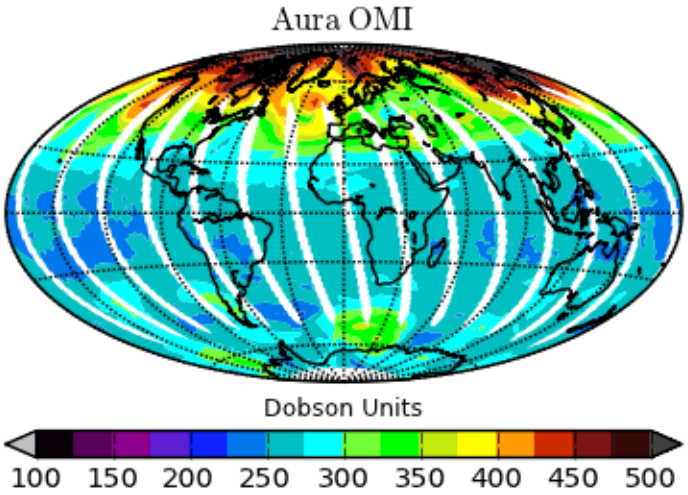


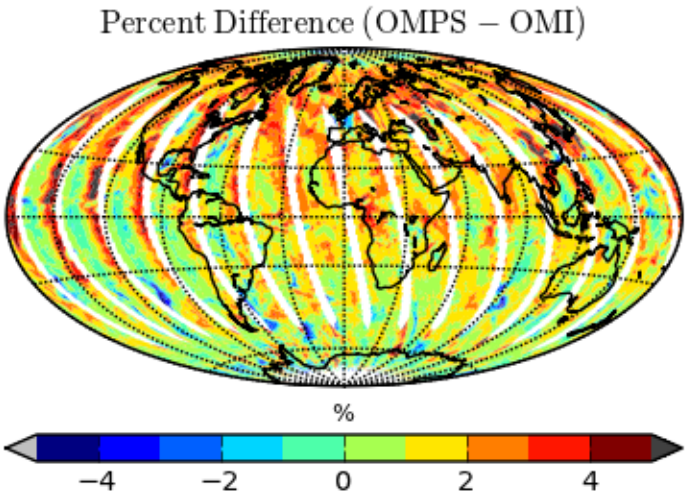
OMPS/NM -OMI SZA Dependence

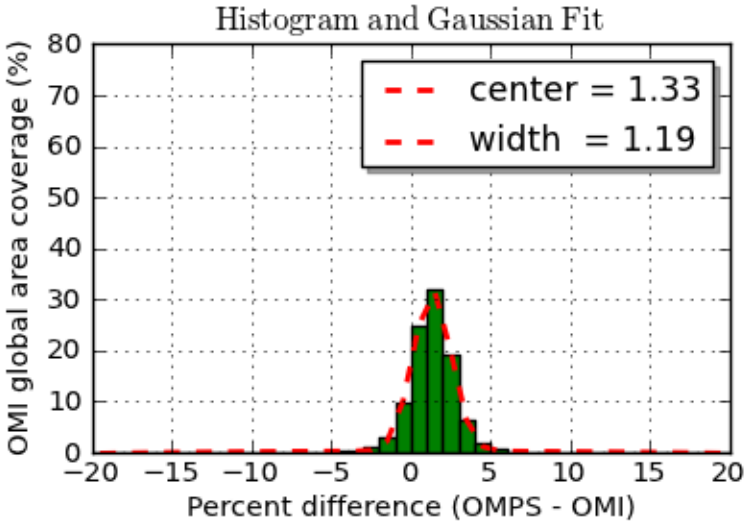


Total Ozone for March 30, 2014 (day 89)









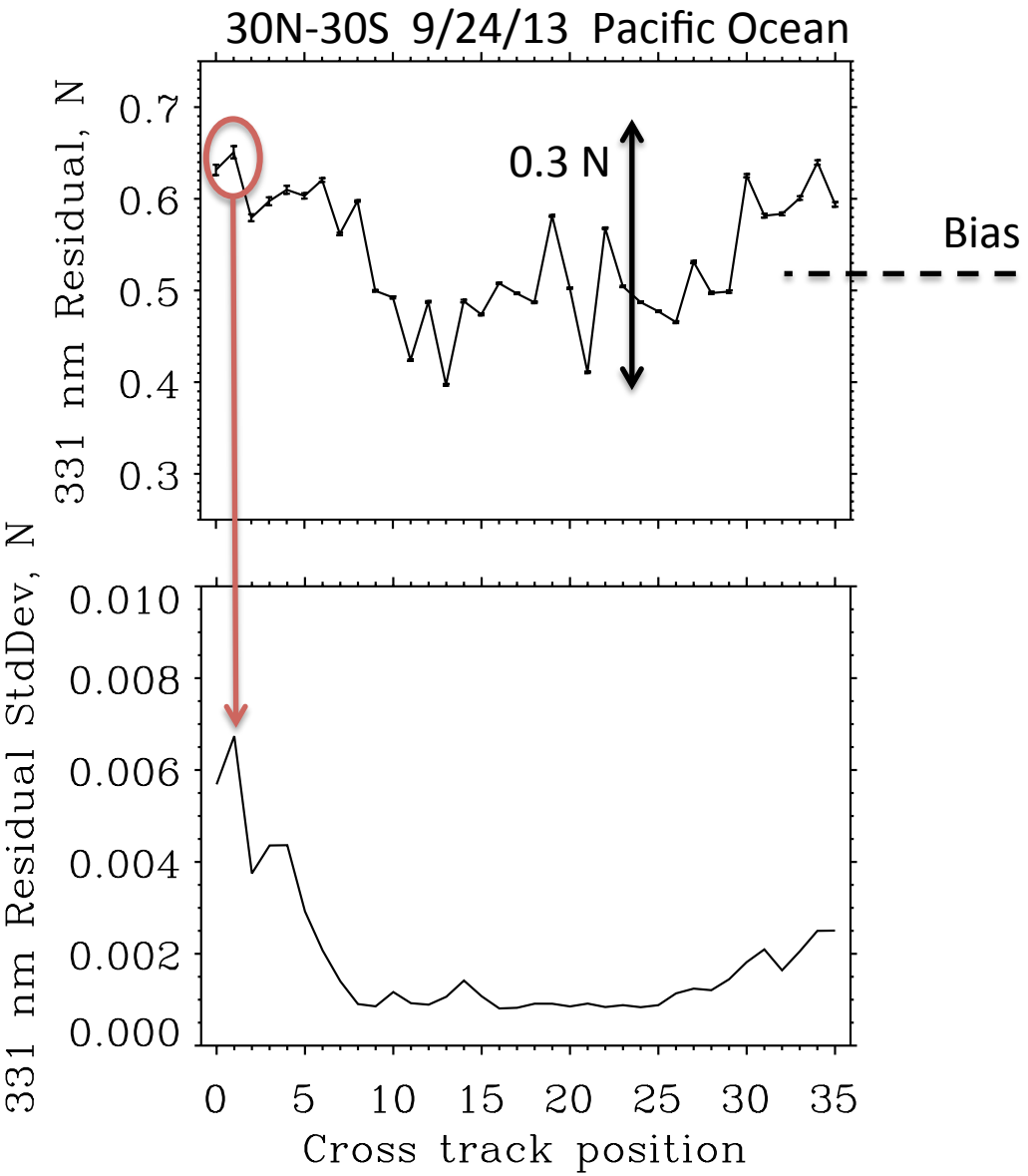
Input Data Products = TC_EDR_TO3_L3Daily & OMTO3dtoz // PGE = TC_EDR_TO3_L3Daily_OmiComparison-1.0.0 @ OZONE PEATE 2014-04-05 01:32Z

V9 for OMPS NM

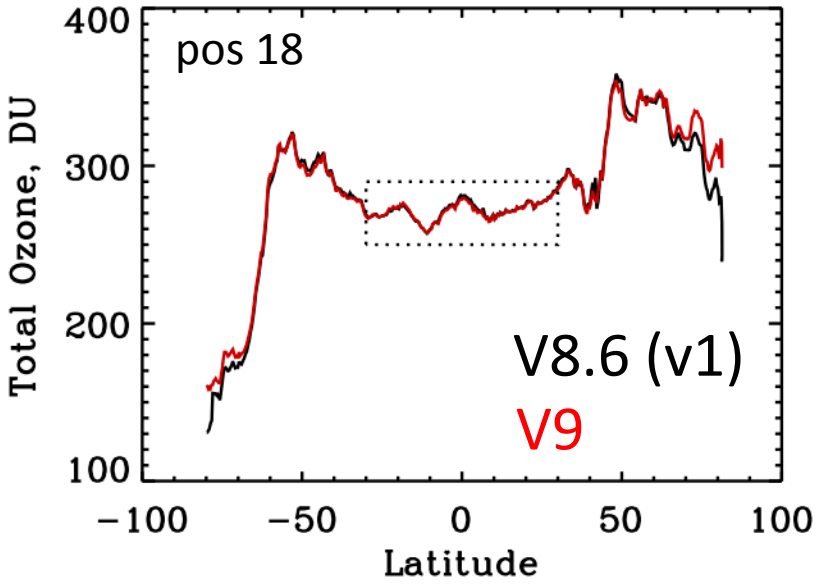
- Basic algorithm – same wavelengths as N7
- Will reprocess with V2 when L1B ready
- Future plans:
  - shift and or add wavelengths to optimize SO2 detection and reduce Raman effect
  - enhance a priori
  - add wavelengths (> 300 nm) for improved O3 profile
  - Not many necessary bcu. remarkable signal to noise

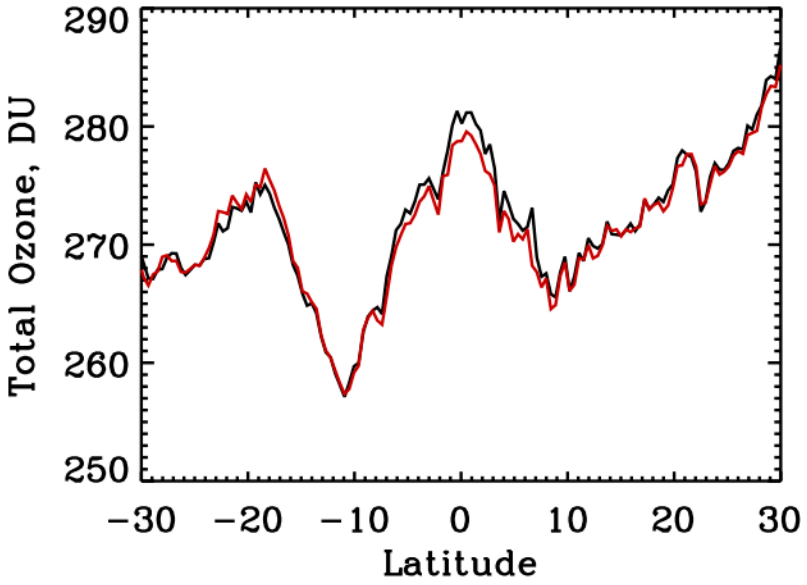
Mapper Residual Noise is Very Small

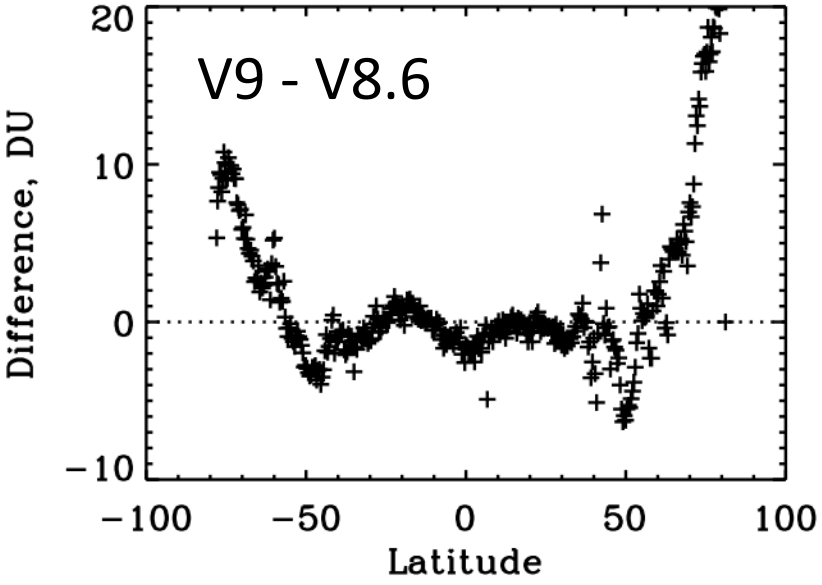
- 331 nm residual is primary indicator of algorithm/ instrument performance in V9 (O3, SO2, R-λ effects)
- SNR ~2000:1 at 331 nm for 50 km^2
- Totally unnecessary for O3 mapping
  - TOMS noise is 10 x greater
  - NP noise is ~4 x greater
- What can we do with this?
  - Reduce resolution w/o SNR concern.
  - Up the calibration precision?
  - Explore interesting Physics?
  - Not sure what we'll find.

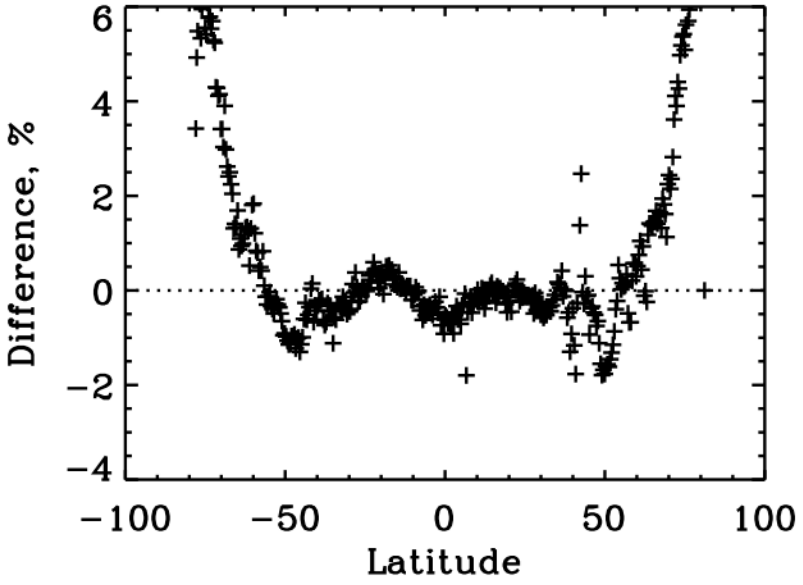


V9 and V8.6 Nadir Mapper Comparison, 9/24/2013





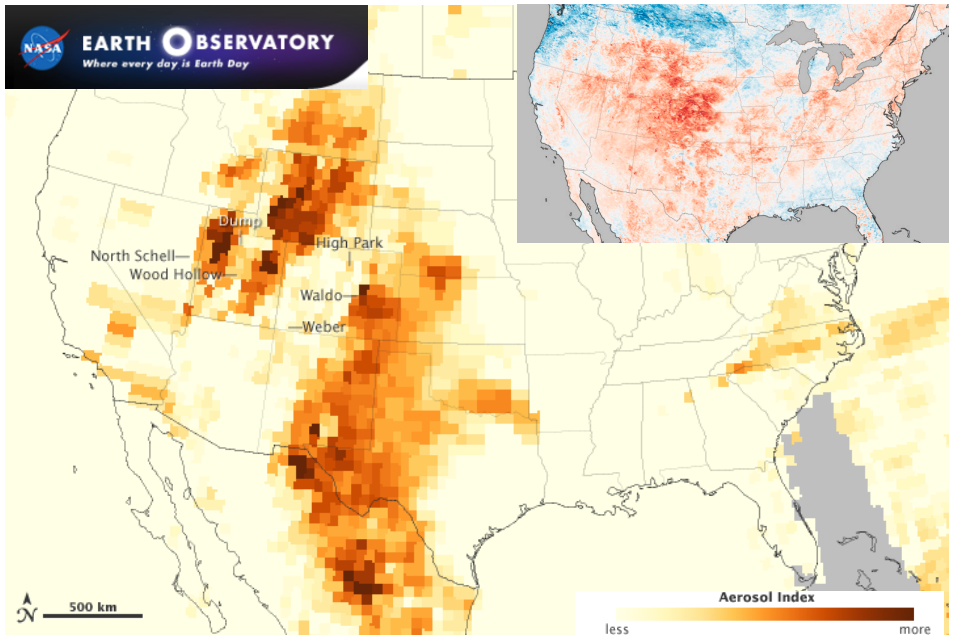




Aerosol Index Products

- V8.6 currently provides AI.
- V9 algorithm will not generate an aerosol index.
- No team was funded to produce aerosol index but appears to be significant public affairs and applications interest in this product.
- Have V8-style algorithm s/w with some improvements (Fresnel Ocean Correction) ready to go.
- Can easily incorporate changes from more advanced AI algorithm from Aerosol Team.
- Question: do we want to do produce a product?

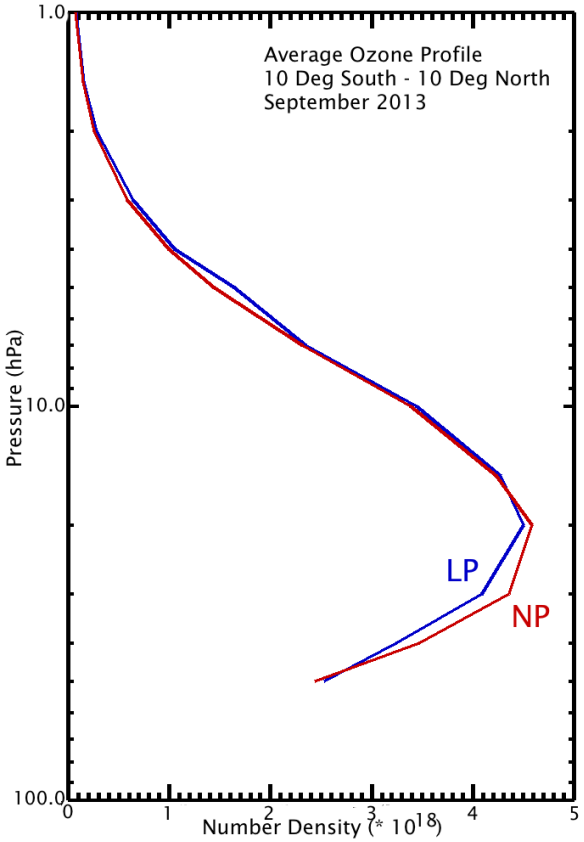
June 26, 2012



Near-term Plans for OMPS NP L2

- Version 2 of dataset to use Version 8.6 NP (SBUV/2) algorithm
  - Revert to L1b/L2 nomenclature
- First reprocessing to take place December 2014 / January 2015
  - Concurrent with NM reprocessing
  - Use OMI OCP climatology
  - Use SBUV/2 approach to account for solar activity
    - Correct in reprocessed data, do not correct "operationally"
  - Analyze results
    - Create a "soft calibration"
      - Absolute from NM
      - Relative corrections determined from MLS/OMPS co-located data
        - NRs calculated using co-located MLS data, compared to measured OMPS NRs to determined N value adjustments
        - Validate with Taylor's analysis
- "Final" reprocessing to take place February/March 2015
  - Concurrent with NM reprocessing
  - Validate results
    - Compare to SBUV/2, MLS, etc
- Release V2 dataset April 2015
- Continue "operational" processing and release
- Update real-time processing package and deliver to DRL for distribution

Comparison of OMPS NP to LP and MLS



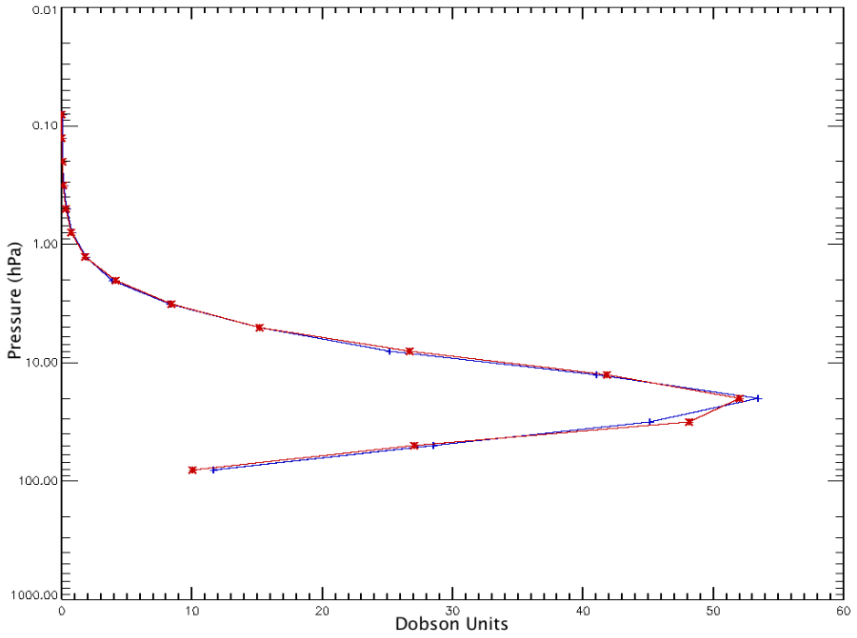


Figure 15: Comparison of the average MLS retrieved ozone profile for 23 June 2012 between 20 degrees south and 20 degrees north with the average OMPS NP profile for the same day. The integrated column ozone amount from 200 hPa to the top of the atmosphere is 235.7 DU for MLS and 236.7 DU for OMPS NP Both the integrated ozone amount and the shape of the ozone profile show excellent agreement.